

REMARKS

Summary of Changes Made

The Application was filed with 14 claims, and claims numbering up to 23 were later added. Claims 2, 3, 7-9, 11-14, 21, and 22 had been canceled previously. Accordingly, claims 1, 4-6, 10, 15-20, and 23 (12 claims) are pending in the application. No new matter has been added.

Claim Rejections – 35 U.S.C. 103(a)- (Kojima)

Claims 1, 4-6, 10 and 15-22 are rejected as obvious in view U.S. Pat. App. Pub. No 2002/0068683 to Kojima, (“Kojima”) for reasons identical to those in the previous Office Action. It is presumed that claims 20 and 21 are not included in this rejection as such claims were previously canceled, and it is also presumed that claim 23 is covered by this rejection. The Examiner continues to believe that the limitations “molded [and] freeze-dried” in claim 1 carry no patentable weight, as they are product-by-process limitations. The Examiner continues to interpret the recitation of an “aqueous solution” in claims 10, 15, 16 and 22, as “contacting the shaped article with water (e.g. tap water)”.

A careful review of the Kojima reference reveals that the solid lubricant objects described therein fail to teach or suggest a porosity characteristic unto itself which allows for the intercalation of water between the sodium alginate molecules and thereby allowing it to breakdown and achieve the instantly claimed solution or gel form.

The solid articles described in Examples 1 to 3 of Kojima are prepared from an aqueous mixture of a solid for lubrication (e.g. polyacrylate) and a solidifying agent (e.g. alginate). According to Examples 1 to 3 a mixture of the ingredients in water is prepared, followed by molding of the water-containing mixture. Paragraph [0063] refers to injection molding of the aqueous mixture, and solidifying by cooling in the mold. It is therefore clear from Examples 1 to 3 that the water which is added to form the molding mixture is still present in the molded solid products. No freeze-drying step, or drying step of any kind, as it is object of the presently claimed invention, is mentioned by Kojima at all.

The Examiner has repeated his contention that molded and freeze-dried are process limitations. Such features are reflective of the state of being of the claimed article made from the claimed skeleton-forming agent. The wording of the claim is also reflective of limitations of the English language. It is critical to the skeleton-forming agent be freeze-dried prior to shaping it. It is also critical that the article be porous in order to serve its function within the claimed method. A solid block of the material could not be used in the claimed method. Neither could a pile of powder of the claimed material in the claimed volume could not be used in the method. The performance of the method is dependent upon the state of being of the claimed article. The state of being of the article is achieved only through freeze-drying.

Furthermore according to paragraph [0013] of Kojima water has to be present in an amount of 1-3 part(s) of the particles of the solid substance for lubrication. This corresponds to a significant water content of 50 - 75 % in the solid for lubrication. In paragraph [0013] it is further stated that when the amount of water is too small, the solid for lubrication becomes too hard. Thus obviously solid objects according to Kojima with a water content less than 1-3 parts are not suitable and thus can not be seen to be an object of the invention.

Accordingly Kojima teaches the preparation of high-viscous solution of one or more binders in water (polyacrylate-alginate-solutions), the extremely high viscosity being responsible for the form stability of the molded objects.

Nevertheless the solid lubricating objects according to Kojima are not dried and still contain a high amount of water. The water molecules are present in the interspace between the solid particles (alginate molecules) of the lubricating articles. Upon addition of (more) water to the lubrication objects dilution of the mixture takes place and the water-intercalation between the solid particles (sodium alginate molecules) enhances thus partly diluting the mixture to become more soluble.

Instead the solid articles according to the presently claimed invention are freeze-dried and thus dry articles wherein porosity is achieved by sublimation of the ice crystals from the frozen molded articles. The interstices between the solid particles (alginate molecules) of the present invention are not filled with water but with air (pores). Perhaps the Examiner would prefer that a the claimed article used in the claimed process were described as "comprising pores" instead of

being "porous." However, Applicants firmly believe that either "porous" or "comprising pores" is not a process (or a product-by-process) limitation, but a statement of the structure of the claimed article, which structure is critical to the performance of the claimed method.

Upon rehydration the pores fill with the added aqueous solution and solubilization to form a gel takes place.

Contacting a porous material with water generally leads to a fast moisturization throughout the whole porous material. The pores act like channels through the material which soaks with the liquid like a foam and rehydrates fast and completely. This effect can be seen with the shaped porous articles of the present invention, which exhibit fast solubilization and gel formation throughout the whole material, see page 17, last paragraph of the specification. Instead the solid objects according to Kojima explicitly do not rehydrate throughout the whole material but only form a lubricating surface film (see paragraph [0006], Fig. 1B, [0043], [0044], Especially paragraph [0044] points out the advantage that the solid objects only gradually dissolve the polyacrylate on the surface and do not dissolve excessively. This behavior stands against the existence of a pore-network or a porosity in the solid lubricating objects.

Additionally porosity of the shaped articles according to the present invention which results from the freeze-drying process leads to shaped articles with a density of 0.005 to 0.8 g/cm³, (see page 17, 2nd paragraph of the specification). It is questionable whether the solid articles prepared according to Kojima will exhibit such low density.

With respect to the foregoing, it is clear that the solid articles according to Kojima cannot be porous and furthermore do not teach or even suggest to have a porosity characteristic at all.

Based on the foregoing, Applicants respectfully submit that the rejection over Kojima is improper and request its withdrawal. Applicants request that Examiner consider and enter the present amendment, and issue a Notice of Allowance for claims 1, 4-6, 10, 15-20, and 23.

Conclusion

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge the same to Deposit Account No. 18-0160, Order No. GIL-16027.

Respectfully submitted,

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